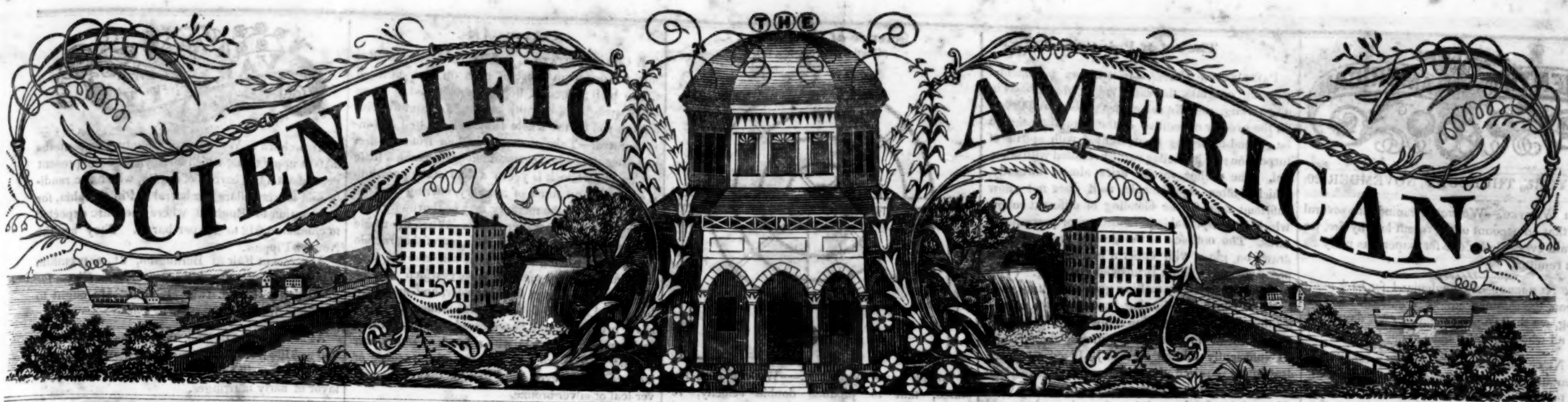

THE ADVOCATE OF INDUSTRY AND ENTERPRISE, AND JOURNAL OF MECHANICAL AND OTHER IMPROVEMENTS.

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THE
SCIENTIFIC AMERICAN.
PUBLISHED EVERY THURSDAY MORNING, AT THE
Sun Buildings,
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ALSO, AT NO. 12 STATE ST., BOSTON, AND NO. 21 ARCADE, PHILADELPHIA.
(The Principal Office being at New York,
BY RUFUS PORTER.

Each number of this paper is furnished with from two to five ORIGINAL ENGRAVINGS, many of them elegant, and illustrative of NEW INVENTIONS, SCIENTIFIC PRINCIPLES, and CURIOSITIES; and contains as much Interesting Intelligence as six ordinary daily papers, consisting of notices of the progress of Mechanical and other *Scientific Improvements*,—American and Foreign Inventions; Catalogues of American Patents;—Scientific Essays, illustrative of the principles of the Sciences of Mechanics, Chemistry, and Architecture;—Instruction in various Arts and Trades;—curious Philosophical Experiments r—Miscellaneous Intelligence, Poetry, and, occasionally, Music.

This paper is especially entitled to the patronage of Mechanics and Manufacturers, being the only paper in America devoted to the interests of those classes; but is particularly useful to Farmers, as it will not only apprise them of improvements in agricultural implements, but instruct them in various mechanical trades, and guard them against impositions. As a family newspaper, it will convey more useful intelligence to children and young people, than five times its cost in school instruction. Another important argument in favor of this paper, is, that it will be worth two dollars at the end of the year, when the volume is complete, and will probably command that price in cash, if we may judge from the circumstance that old volumes of the "New York Mechanic," by the same editor, will now command double the original cost.

TERMS.—"The Scientific American" will be furnished to subscribers at $2, per annum,—one dollar in advance, and the balance in six months.

Five copies will be sent to one address six months, for four dollars in advance.

Any person procuring two or more subscribers, will be entitled to a commission of twenty-five cents each.

TERMS OF ADVERTISING.—For 10 lines, or less, 50 cents for the first, and 12 1-2 cents for every subsequent insertion.

Song of the Locomotive.

BY JAMES STILLMAN.

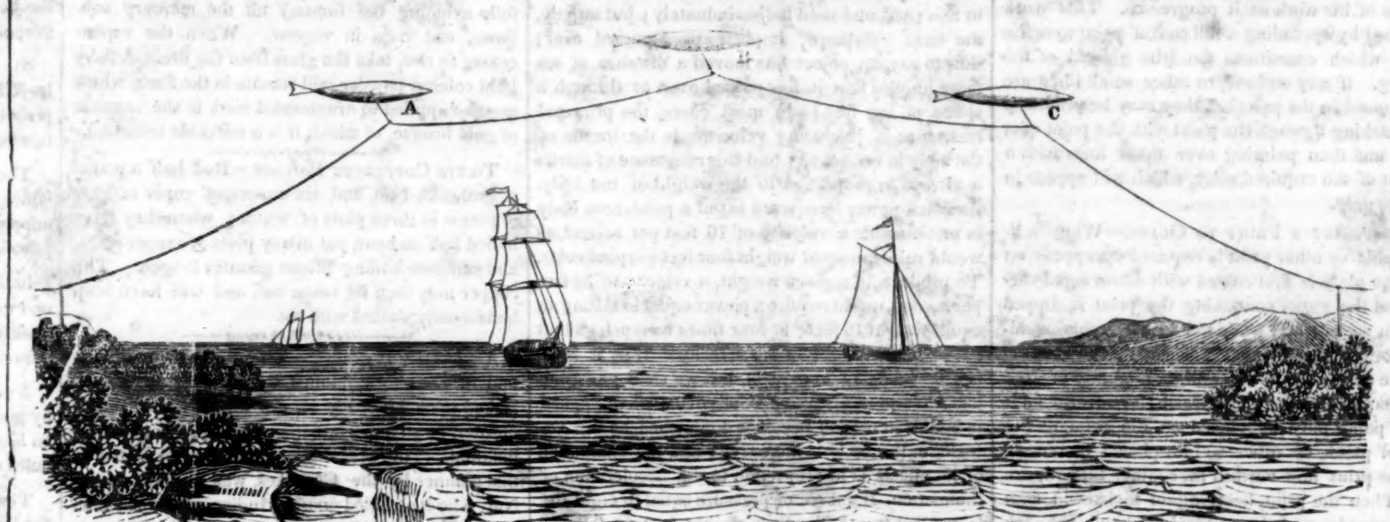
Onwards I come in my pow'r and pride,
With speed that I will not slack;
And over every thing I'll ride
Which comes upon my track.
The drink I love is the boiling stream,
My food is the blazing fire,
And volumes of hot and scalding steam
Are the breath which I respire.
The fleetest courser I leave behind,
And the bird in its airy flight,
The feathered shaft and the rushing wind,
I pass in my furious might;
The head gets dizzy, the eyes grow dim
That strive my course to trace,
While swift as the livid lightning's gleam
I hurry along my race.
Chain to my iron frame your cars,
And mount in what number you please,
No matter what burden beside they bear,
I'll drag them along with ease.
Off I will start when the morning light
Girds the orient with its glow,
And onward keep when the starless night
Is shading the world below.
Around the earth clear me a track,
Give me my water and fire,
And I the circuit will quickly make,
Nor think that I soon will tire.
My muscles, and sinews, and nerves are brass,
My ribs of the old oak grim,
And well-hammer'd metal my bowels incase,
And iron or steel is each limb.
A warning light is my smoky glare,
At the sound of my hissing breath
Clear from my path, for the loiterers there
Meet bruises, and wounds, and death.
For onward I come, in my pow'r and pride,
With speed that I will not slack,
And on to my journey's end I'll ride,
And nothing shall keep me back.

The Thunder Gust.

The loud wind roared, the thunder roll'd,
Fierce lightning split the sky,
And all the west seemed fringed in gold,
As I was reaping rye.
I laid my sickle down to view
The grand and awful scene,
But I didn't stay to see it through—
Oh no—*I warn't so green.*

SHERIDAN AND THE BOOTS.—Sheridan made his appearance one day in a pair of new boots; these attracting the notice of some of his friends, "now guess," said he, "how I came by these boots?"—Many *probable* guesses then took place. "No," said Sheridan, "no you've not hit it, nor never will—I bought them, and paid for them!"

THE MAGNETIC TELEGRAPH CROSSING A RIVER.



EXPLANATION.—One of the principal difficulties which has been encountered in the establishment of lines of the Magnetic Telegraph, is that of extending it across rivers and bays. To lay the wires upon the ground or bottom of a river, would be easily done; but the water being itself a conductor of electricity, it is difficult to prevent the diffusion of this fluid from the wires. The method which has been adopted, is that of enclosing the conducting wires, within a leaden pipe, but without allowing the wires to come in contact with the pipe, or with each other. But this method is not safe, as the pipe is liable to be broken by ships' anchors, or of imbibing a small quantity of water. which might derange the operation. It is therefore proposed to support the wires in an elevated position, by means of buoyant revoloidal spindles, or eliptic balloons, as shewn A, B, C, in the engraving. These balloons, being each sixty feet in length, and ten in diameter, will support about 40lbs. each besides its own weight. The cost of them will not exceed $200 each, being made of thin varnished cloth, and inflated with hydrogen gas. Each balloon will have a vane appended, which will govern the position of the balloon, and keep it pointed to the wind: and it is readily demonstrable that the balloon will not be subject to a force or pressure of wind, equal to 5 lbs. even in a heavy gale. Each balloon will sustain from 200 to 300 feet of the telegraph wires, which may pass for miles, if required, at such an elevation, as to be far above the reach of the masts of vessels. A small pipe 1-4 inch in diameter will be extended in connection with the wires, to each balloon, and by means of which the gas in the balloon may be replenished as often as occasion may require.

THE STEAM HORSE.—Elihu Burritt has a better fancy for a steam horse than we remember to have met elsewhere before. This is his way of describing him: "I love to see one of those huge creatures, with sinews of brass and musles of iron, strut forth from his smoky stable, and saluting the long train of cars with a dozen sonorous puffs from his iron nostrills, fall gently back into his harness. There he stands, champing and foaming upon the iron track, his great heart a furnace of glowing coals; lymphatic blood is boiling in his veins—the strength of a thousand horses is nerving his sinews, he pants to be gone. He would 'snake' St. Peter's across the desert of Sahara, if he could be fairly hitched to it; but there is a little sober-eyed man in the saddle, who holds him with one finger, and can take away his breath in a moment, should he grow restive and vicious. I am always deeply interested in this man; for, begrimmed as he may be with coal, diluted in oil and steam, I regard him as the genius of the whole machinery—as the physical mind of that huge steam horse."

IMPORTANT TO BLACKSMITHS.—A correspondent informs us of a very useful discovery he has made in burning wood coal, and requests that we make it public. The improvement consists in the use of *ground bark* in the place of dirt, as a covering for the kiln. Our correspondent, who is a practical blacksmith, in communicating the result of his experiment, says—"I covered with the old bark that had been used in tanning. I used leaves from the woods before the bark, the same as I would for covering with dirt—both leaves and bark should be made thoroughly wet. The advantages of this plan are: the kiln, if well set and well covered will burn much sooner, will never 'break out,' leave fewer brands, and consequently turn out a larger quantity of coal. The coal is heavier, more thoroughly burnt, and entirely free from dirt."—[*Ex. paper.*

MOST IMPORTANT DISCOVERY.—The St. Louis Missourian says that wild hemp has been found in that State. A farmer from St. Louis county, being in Capt. Jenks' hemp warehouse, accidentally saw some Manilla hemp, made inquiry what it was, and upon being informed that it was Manilla hemp, said he had produced something exactly like it from a weed on his farm, and that he would send in a sample, which he did; and it proves to be a variety of the Manilla hemp, resembling most the New Zealand Hemp, but it undoubtedly belongs to the same genus as the New Zealand, Sisal and St. Domingo hemp, from which all our heavy cordage is made. If this can be found in any quantity, it is a most valuable discovery.

SOLID IRON.—Vermont is becoming very rich in minerals. An immense mass of solid iron has just been dis covered along the base of the Green Mountains, between Monktown and Bennington. Hitherto iron has been obtained there only in detached fragments; now it is blasted out in large quantities by the miners. It is found in regular solid beds, interstratified with rock, and generally reposing on lime stone rocks. It is thought to be co-extensive with the rock, and inexhaustible. This is a valuable discovery; and, in the hands of the enterprising and industrious Vermonters, will soon render Vermont a large iron manufacturing State.

ACCIDE[illegible] AND CRIME.—From the last annual report of the Reg[illegible]ster-General in England, it appears that, during [illegible] year, 3305 persons were killed by machine[illegible] more [illegible]ys, walls of stone, carriages, horses, &c.; more [illegible], viz: 2577 by burns, 332 by scaldi[illegible] more [illegible] explosions; 1950 by drowning, [illegible] There were also 65 [illegible]

BRITISH CONTRIBUTIONS TO SCIENCE, ART, AND USEFUL KNOWLEDGE.—We gather from the proceedings of the late session of the British Parliament, that it appropriated for additional rooms for the British Museum £50,000, for purchasing certain collections for that institution £6,217; for the National Gallery 1,500*l.*; for the geological survey of Great Britain and Ireland 8,850*l.*; for magnetic observations 5,839; for monuments to Lords de Saumarez, Exmouth and Sir Sidney Smith 1,500*l.*; for communicating with India, via the Red Sea 50,000*l.*; for ditto between India and China 99,000*l.*; for the School of Design 4,911*l.*; for the Scottish Universities 7,380*l.*; for Belfast Academy, 2,100*l.*; for public education in Great Britain, 75,000*l.*; for public education in Ireland, 75,000*l.*; all for 1845—total 387,317.

INFLUENCE OF THE MOON ON TREES.—An intelligent gentleman engaged for nearly thirty years in cutting timber in Demarara and who has made extensive observations upon trees, says that the moon's influence on trees is very great; so observable is this, that if a tree be cut down at full moon, it will immediately split, as if torn asunder by great external force. Trees are also attacked much sooner by the rot than if allowed to remain to another period of the moon's age. Those intended, therefore, to be applied to durable purposes are cut only during the first and last quarters of the moon; for the sap rises to the top of the trees at full moon, and falls in proportion to the moon's decrease.

WESTERN HEMP.—It is stated by the Cincinnati News that the Maysville hemp market furnishes about thirty-six hundred tons per annum: whereas Weston, Mo., a town of yesterday, according to the Democrat of that place will export at the lowest estimate this season three thousand tons; about equal to that shipped at the most important point in Kentucky. The hemp shipped at Weston, is almost exclusively of the growth of Platte. We are informed that at St. Joseph and other points on the river, in what is called the Platte Purchase, the amount shipped is very considerable.

A STUMP SPEECH.—"If I'm elected to this office, I will represent my constituents as the sea represents the earth, or the night contrasts with the day. I will unrivet human society, clean all its parts, and screw it together again. I will correct all abuses, purge out all corruption, and go through the enemies of our party like a rat through a new cheese. My chief recommendations are that at a public dinner given to ——, I ate more than any two men at the table—at the late election I put in three votes for the party—I've just bought a new suit of clothes that will do to wear to Congress, and I've got the handsomest sister in old Kaintuck."

The deeper a man digs into the gold mine, the less able, ay, less willing, is he to breathe the sweet air of upper earth, or to bask in the daylight of heaven: downward, downward still, he casts the anchor of his grovelling affections, and neither can nor will have a heart for any thing but gold.

The Boston Mail says, several vessels from that port have taken cargoes of ice to Philadelphia, and brought back cargoes of coal. We understand now what is meant by reciprocity of trade:—we cool the Philadelphians in summer, and they warm us in winter.

Somebody says, that persons who are always cheerful and good humored are very useful in the world; they maintain peace and happiness, and spread a thankful temper amongst all who live around them.

AN India Rubber Factory in Providence manufactures 600 pairs of shoes daily. The India rubber being first mashed, is dissolved in camphine, and passed several times between two iron rollers. It is then run off in a very thin web by passing it between heavy rollers upon cloth, where it is kept in place until several layers are made, so as to obtain the desired thickness, During this operation the material is kept warm by steam. One girl makes from 10 to 15 pairs of men's rubber shoes per day after the material is prepared.

PORT OF ENTRY.—Rochester begins to put on a lively appearance of shipping interests, and will shortly become an important commercial, as it is a trading city. The last arrivals are chronicled as follows:—steamer America, from Toronto and Coburg; steam-propeller from Oswego: the brig Empire, from Oswego; steamer Neptune, Sackett's Harbor; St. Lawrence, from Ogdensburgh; propeller Vandalia. of Oswego, &c. &c. A few years more, and our Lake commerce will be immense.

A CRUSTY ONE.—The editor of the Hagerstown News, himself an old bachelor, says, and with no little truth too, that—"nothing can prevent an increase of bachelorism save an amendment in the mode of educating women. When they learn some useful employment, instead of beating the piano—when they prefer honest industry to silly coxcombry, and when men find that woman is a helpmate instead of a burthen, then we may expect to find few bachelors—not till then.

PLANTING TREES.—From the time the leaves have mostly fallen to the middle of November, is suitable for transplanting. In climates as mild as that of the vicinity of this city, the roots of fall transplanted trees grow and mature themselves before severe frosts sets in. Hence it is important to set out as early as possible after the leaves have fallen. A deep loam is the soil which is generally to be sought. The quality of the fruit is thought to depend more on the soil than on the climate.

A quarry, of the most beautiful variegated marble, commonly called serpentine, has been lately discovered in Florida, Mass. Specimens, which surpass the Egyptian in beauty and variety of colors, and susceptibility of polish, have been shown us, which we learn are a fair sample of an inexhaustible mass. The grain is finer and the structtre more compact than that of any other marble in this region, and when polished in thin slabs, the clouds and different shades of color are of great beauty.

INDIAN CAMP-MEETING.—The Cherokee Advocate gives an interesting account of a Methodist Camp Meeting held near Doaksville, in the Choctaw Nation. The account speaks well for the progress of the Choctaws in civilization and Christian knowledge.

MAMMOTH CAVE, KENTUCKY.—Not less than two hundred and twenty-odd avenues have been discovered in this celebrated cave, not one in a dozen of which is visited by the ordinary visiter.

BREACH OF PROMISE.—Miss Louisa Fenzell recently recovered from Mr. J. Aughinbaugh $1,850 for breach of marriage promise, in Marion county, Ohio. She was lucky to escape such an uncouth name, to say nothing of the money obtained,

A cricket match was recently played in this city, between the married members and the bachelors of the cricket club, and was won with ease by the married party.

CATALOGUE OF AMERICAN PATENTS ISSUED IN OCTOBER, 1845.

To Wm. Trapp, jr., of Dryden, N. Y., for improvements in barrel machinery—Oct. 1.

To Benjamin M. Smith, of Massillon, Ohio, for improvement in machinery for breaking and dressing flax and hemp—7th Oct.

To Geo. O. Russell, of Middletown, Conn., for improvement in the manufacture of door-knobs—7th Oct.

To Walter Hunt, of New York, for improvement in inkstands, (having assigned his right, title, and interest in said improvement to Augustus T. Arrowsmith,)—7th Oct.

To Thos. B. Quigley and Harvey Hall, of Mansfield, O., for improvement in wheel-plows—7th Oct.

To Lewis Edwards, of Norwich, Conn., for improvement in rolling machines—9th Oct.

To Isaac Tyson, jr., of Baltimore, Md., for improvement in manufacture of chromate of potash—9th Oct.

To Benjamin Brown, of Burlington, Vt., for improvement in planing machines—9th Oct.

To William Rowan, of Belfast, Ireland, for improvement in anti-friction boxes for axles, &c., (having assigned his right, title, and interest in said improvement to Thomas Murray Megget, of New Orleans, La.)—patented in Ireland 7th Nov., 1844, and in America 9th Oct., 1845.

To Joseph S. L. Hunt, of Boston, Mass., for improvement in machinery for planing shingles, &c., 9th Oct.

To John C. Briggs, of Saratoga, N. Y., for improvement in pegging-machines—9th Oct.

To John C. Palmer, of East Haddam, Conn., for improvement in door-fastenings—11th Oct.

To Thos. S. Washburn, of Lowell, Mass., for improvement in burring-machines—11th Oct.

To Alanson Crane, of Lowell, Mass., for improvement in burring-machines—11th Oct.

To Samuel H. Bran, of Philadelphia, Pa., for improvement in the manner of replacing railroad cars upon the track—11th Oct.

To Richard Hemming, of Boston, Mass., for improvement in connecting links for railroad cars 11th Oct.

To A. S. Pelton, of Clinton, Conn., for improvement in shingle machines—15th Oc.

To S. H. Gilman, of Boston, Mass., for improvement in the manufacture of forks—16th Oct.

To William Hall, of Boston, Mass., for improvement in locks for banks and safes—16th Oct.

To Henry Stanley, of West Poultney, Vt., for improvement in rotary-top stoves—25th Oct.

To C. F. Baldamus and F. W. Siemens, of Berlin, Prussia, for improvement in anastatic printing—25th Oct.

To Ethan Campbell, of New York, for improvement in sugar making—25th Oct.

To Edward Badlam, of Potsdam, N. Y., for improvement in pianofortes—25th Oct.

To J. Farnam, of Stillwater, N.Y., for improvement in manufacture of pottery ware—25th Oct.

To Ira Smith, of Chagrin Falls, Ohio, for improvement in bedstead fastenings, (having assigned his right, title, and interest in said improvement to Adin Gauntt)—25th Oct.

To Jesse Ursey, of Wilmington, Del., for improvement in cutting and grinding corn in the cob—25th Oct.

DESIGNS PATENTED.

To Addison Low, of Albany, N.Y., for design for stoves, (having assigned his right, title, and interest in said improvement to Rathbone & Co., of Albany, N. Y.,)—7th Oct.

To Clark Mills, of Charleston, South Carolina, for design, (bust of J. C. Calhoun)—7th Oct.

To John S. Peckham and M. Peckham, of Utica, N. Y., for design for a stove: patented 16th October, 1845—antedated 6th Sept., 1845.

To Henry Stanley, of Poultney, Vt., for design for stove—16th Oct.

To Ezra Ripley, of Troy, N. Y., for design for stoves, (having assigned his right, title, and interest in said design to E. Johnson, G. Geer, and D. B. Cox, of Troy, N. Y.): patented 16th Oct., 1845—antedated 14th August, 1845.

THE BULL.—The Horse is called a noble animal, but for indomitable courage the Bull takes rank before him. Nothing daunts the Bull, he is altogether a stranger to fear, and runs headlong to destruction. A few days since, as the railroad train from Boston for Fitchburg had reached within a mile of Leominster village, a noble bull, that had escaped from an enclosure, and like a knight of old, had taken his stand on an embankment, ready to encounter all comers in single combat, regarded the fierce-looking smoking steaming locomotive, as an enemy, and uttering a roar of defiance, dropped his head and prepared for the dreadful encounter!

The engineer saw the enemy, and not being pugnaciously inclined, tried to stop the train. But it was too late—the bull and the locomotive came in contact with a terrible crash—and the living breathing, four footed monster got the worst of it, Never was a knight hurdled from his saddle with more force in the lists, or on the embattled plain in days of yore, than was this valarous bull borne to the earth by his ponderous opponent. Crushed down between the tracks—with his head fractured, his body bruised, and his limbs mutilated, he presented a sorry spectacle—a sad warning to bulls to be more cautious in future in selecting their enemies in single combat. (N. Y. Sun.

A FOURTH OF JULY TOAST.—The memory of the man, that owned the land, that raised the corn, that fed the goose, that bore the quill, that made the pen, that wrote the Declaration of Independence!

The Americans have 600 whale ships in the Pacific ocean, being twice as many as those of the whole world besides.

SCIENTIFIC AMERICAN

NEW-YORK, THURSDAY, NOVEMBER 20.

CASH WANTED.—We would remind our several agents that on account of our recent loss by fire, we shall want every dollar due for papers, as early as may be remitted.

BACK NUMBERS.—As the demand for back numbers from the commencement, is extensive and increasing, we shall re-print them in a few days, and supply all who may order them in due season.

OUR NEXT NUMBER.—We purpose presenting a representation and description of the Self-acting Pump, to which we alluded in a former number. The series on Chemistry will be resumed, and that on Galvanism will be continued.

AERIAL NAVIGATION, &c.—Our readers need not suppose that we have done with the subjects of Aerial Navion, or with ploughing and carting by steam. We are only waiting to bring up some other branches to a proper bearing, when we shall resume the main subjects.

COMMUNICATIONS.—Our patrons and readers are respectfully requested to send us notices of new Mechanical Inventions and other improvements, manufactories, &c., that may come under their observation, and may be deemed worthy of public notice. We shall pay the postage on such communications with pleasure.

PROSPECTIVE.—We intend soon to publish an interesting work, purporting to be written in 1855, and containing a history of thrilling events occurring between the years '15 and '55. The narative will abound with extraordinary incidents, and wonderful revolutions effected by the progress of invention and improvements, on strictly rational principles; and introducing, with embelishments and illustrations, a great variety of new mechanical inventions performing wonders, but strictly within the range of probalitity, and on true principles of established laws of Natural Philosophy.

HUMBUG INVENTIONS.—We are inclined to pity those editors, who, having no interesting intelligence to communicate, in order to give apparent interest to their papers, resort to the pernicious expedient of inventing a pretended account of some wonderful but ridiculously absurd discovery or invention. The practice is pernicious, because it communicates to people who most need instruction, darkness rather than light. In consequence of this, there are too many people who, when they hear of the most valuable and interesting *real* invention, are ready to regard it with contempt, because they have read of something so far superior, in the papers. The ridiculous English hoax about the *successful* flying machine, though utterly void of the least rational principle, has nevertheless made such an impression on the minds of thousands, that they will not regard any thing *rational* on the subject of aerial navigation. No rational improvement in roofing, can engage any interest, because it necessarily comes short of the wonderful excellence of the humbug on that subject, put forth by the Philadelphia Ledger. We were led to these remarks by the appearance, in one of the *respectable* city papers—one, by the way, which is "pretty well up" to such things,—of two *very important* inventions: one of which is that of making artificial stone, as firm and hard as flint or marble, by the simple process of *grinding flint or marble—making them into a thick paste*, (with water of course,) *putting this paste in moulds and baking it.* The other is "an improved method of silvering looking-glasses," by "dissolving *nitrate of silver* in *distilled water*, and *pouring this liquid on the glass*, &c. And, we are sorry to observe, that notwithstanding the palpable absurdity and absence of all rational theory in such processes, the articles are being extensively copied in other papers, and being duly accredited, reflect rays of dusky fame back upon the source from whence they emanated. For the edification of those who have "taken the bait," we would remark that either flint, marble, or granite,—especially the two latter,—so far from becoming consolidated, quickly loose their *natural* adhesive property, by exposure to heat. And that neither silver in any form, nor any other metal, except mercury, is capable of communicating the true reflective property to glass. We may notice, occasionally, the "new inventions" of this class, with due credit, in the early stages of their progress.

WATER-POWER RAILROAD.—The proposed railway from Callao to Lima, in Peru, will neither require the agency of steam, nor the aid of fire The ground has a gradual and unbroken rise the whole way. Above Lima flows the river Rimac, which passes through a part of the city in its way to the sea near Calla. It is therefore proposed to propel the cars by means of belts attached to the trains, and passing over large drums at each end of the road, and these drums to be driven by one or more water-wheels erected on the stream by the road side.

INGENIOUS CONTRIVANCE.—A young artist—to whom we have heretofore alluded—in this city, has adopted an effectual plan for closing the windows of his office, on the approach of a shower, without any personal attention. A small lever is attached to the side of the window-casing by a pivot, in such a position that when the lower sash is raised, it is made to rest on the short end of the lever, while the other end projects a few inches outside, and terminates in a small hook. He has then only to attach one end of a narrow strip of thin soft paper to this hook, and the other end to another hook attached to the casing a few inches below the lever, and the sash is sustained; but a single drop of rain falling on the paper, instantly deprives it of its adhesive strength, and he sash descends by its own gravity.

The art of Painting.

PAINTING ON GLASS.—In ordinary ornamental painting on glass, the same colors are used as in oil painting, and are sometimes ground in oil; but for the greater expedition of the work, they should be ground in drying japan, diluted with spirits of turpentine; or in shellac varnish diluted with alcohol. The shellac varnish dries almost instantly, which is often objectionable, as it does not allow suffisient time for the blending of different colors, which is indispensable in landscape or portrait pictures. The outlines of the design are generally drawn on glass, with either a pen or a fine hair-pencil, dipped in dilute Brunswick Blacking. (This compound is made by melting gum asphaltum, over a fire of coals, and diluting it with spirits of turpentine, cautiously adding a few drops at a time, away from the fire, and briskly stirring the mixture, till sufficiently diluted for use.) If a lead pencil drawing is required, the glass must first have a thin coat of very dilute copal varnish put on the work side, and dried. In applying the colors, the usual order of operation must be reversed: and such colors, and finishing touches, as are last applied in other painting, must be the first in this. During the process, the glass should be placed in a vertical position, and a mirror placed behind it, so that the artist, by looking in the mirror, may see the opposite side of his work as it progresses. This work is finished by spreading a full coat of paint over the whole, which constitutes the true ground of the painting. If any outlines, or other small lines are yet required in the painting, they may be produced by scratching through the paint with the point of a needle, and then painting over these lines with a full coat of the required color, which will appear in the lines only.

TRANSPOSING A PRINT TO GLASS.—When a lithographic or other print is required to appear on glass, the glass is first coated with dilute copal varnish, and the paper containing the print is dipped in warm water; and while the varnish remains adhesive or sticky, the paper is placed on the varnish, with the print side down, and then gently pressed till all parts adhere to the varnish: or several folds of soft paper may be placed on the print, and a piece of plank or other weight placed thereon to keep the print and varnish in contact till both are dry. Then the print, being again moistened with water, may be peeled or rubbed off, leaving the ink of the print adhering to the glass. The several parts of the print may then be painted with appropriate colors, on the glass, and finished with a ground-coat over all, as before-mentioned.

TRANSPARENT PAINTING ON GLASS.—Place the glass between the eye and a window, or some light object, and having drawn the outlines with Brunswick blacking, proceed to color the several parts of the design with the transparent colors, or laquers, described in No. 9, adding one, two, or more coats where the deeper shades are required. For this purpose, however, the colors should be prepared in dilute copal varnish; or a coat of this varnish should be spread over the colored work, if prepared in shellac.

The process of enamelling, gilding, and bronzing on glass, will be described in our next number.

The New Organ.

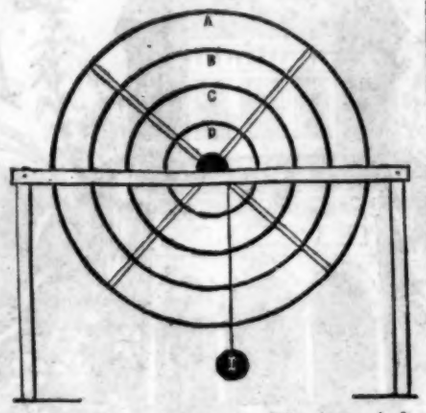
In our last we promised some further description of the superb new organ recently completed by Mr. Thomas Robjohn, of this city, which organ is set up in the Rutgers Street Church. This organ combines many important improvements which are difficult to describe. It is thirty-three feet high, 17 feet wide, and 15 feet 7 inches deep, finished throughout in the Gothic style. The largest pipe is 16 feet long and 18 by 21 inches in diameter. The smallest pipe is 3-8 of an inch long, and 1-10 in diameter. There are two bellows, one of a high pressure for the large pedal pipes; the other is of a low pressure, and by a peculiar arrangement, the low pressure bellows receives its supply from that of the high pressure, when it overflows, thus producing a very steady wind in the organ, and completely avoiding the irregular blasts or shaking which are often annoying in other organs. The size of the bellows is ten feet long by six feet six inches wide, and is supported by four feeders operated by a crank. The organ has three benches of keys, two octaves of pedals and thirty-seven stops. There are seven copulas whereby the organist can produce various combinations which gives great variety and power to the instrument. They are on an improved principle and must be seen to be appreciated. There are two stops in the pedals from one set of pipes, making a loud and a soft stop as the wind is taken from the high or low pressure. The swell is triple with quadruple shades; and each box being covered with pasteboard, this swell is so very effective that when the full swell is drawn, it can hardly be heard. In the mechanical part of the organ there is an improvement by which the clattering of the keys is avoided; all the holes being bushed with cloth; and the pivots being silvered, the operation and movement is beautifully smooth and free. We are aware that no person could form any correct idea of this instrument from this imperfect description; but those who have listened to its notes, under the operation of a skilful performer, have no occasion for description to convince them of its superior excellence.

AERIAL ADVERTISING.—Three large fire-balloons were recently seen to ascend from different parts of London at mid-day, and having reached a considerable altitude, each of them discharged large quantities of bills, announcing some new periodical publication. These bills were eagerly collected by the curious, and thus gained a hundred-fold more attention than they would by ordinary distribution.

COVERING ROOFS.—In Cincinnati the custom prevails of covering the roofs of houses with stout paper, coated with tar and sand or gravel, in preference to zinc or tin. One objection to this mode, however, is that it does not keep the roof boards so dry, and consequently will not preserve them so long, as the metallic roofs.

Science of Mechanics.

(Continued from No. 9.)



POWER AND VELOCITY.—We have before stated, that to produce double velocity, requires quadruple power; and we shall now endeavor to illustrate this important principle.—"Velocity" implies quickness of motion, and is nearly synonimous with 'speed;' and is usually designated by time and space; or the space over which an object passes in a specified time. (The terms "space" and "distance" are often confounded in this case, and used indiscriminately; but strictly, the term "distance" implies space passed over; thus to say, an object has moved a distance of ten feet; implies that it has passed over or through a space of ten feet.) In most cases, the principal resistance in producing velocities is the inertia of the body to be moved; and this resistance of inertia is always in proportion to the weight of the body. As much power is required to put a ponderous body in motion with a velocity of 16 feet per second, as would raise an equal weight four feet perpindicular. To produce in a given weight, a velocity of 32 feet per second, would require a power equal to raising an equal weight 16 feet; or four times as much as that required to give it half the velocity. Why it is so, is rather difficult to explain, but we shall neverthe less attempt it. The *effect* of power when applied to bodies in motion becomes diminished, as the velocity of the body is increased; and the diminution of its effects is in proportion to the acceleration of the motion. If a force or pressure equal to eight lbs. is applied to a ball whose weight is eight lbs. and this force is continued through a space of four feet, the ball will have acquired a velocity of 16 feet per second; and the time occupied in passing this distance will have been half a second. If the force is continued another half second, the velocity of the ball will have been doubled, and the distance will have been 12 feet; or three times as great as that required to produce the first mentioned velocity. And although there has been an equal power applied and expended, in passing each four feet of the distance, yet the velocity produced by this power will have been no greater in passing the last twelve feet, than in the first four.

The effect of a specific and uniform force, in producing velocity by overcoming the resistance of inertia, is in proportion to the time or duration of the application, without regard to the distance: while on the other hand, the expense of *power* is in proportion to the velocity; or time multiplied by distance. To illustrate this more fully, we have procured and placed at the head of this article a representation of a fly-wheel, with four several rims or peripheries A, B, C, D. Suppose the circumference of the largest periphery A, to be four feet; that of B, three feet; that of C, two feet, and D, one foot. Suppose the ball I, to be suspended from the shaft of the wheel, the circumference of which is six inches: and the weight of the ball to be eight lb.—then, if the ball descends one foot per second, the velocity of D, will be two feet per second; that of C, will be four feet, that of B, six, and that of A, will be eight feet per second: while on the other hand, the force applied to, or exerted on the shaft, being eight lb. that on D, will be but four: that on C, will be two lb.—on B, one and a half, and on A, only one lb. Thus the force exerted on either of the peripherics, is diminished in proportion as the velocity is increased; notwithstanding that the same quantity of power is applied and expended on each or either. In speaking of the exertion of force on different peripherics, it is not to be understood that this force is exerted on all at the same time, but merely on either one to which resistance may be applied. Suppose the weight of each periphery to be the same, and so detached that the force produced by the ball E, may be applied to either, independent of the others: then if the power is sufficient to overcome the inertia of D, so as to produce one revolution in one second, and consequently four revolutions in two seconds, the same power being applied to C, would produce one half of one revolution in two seconds; or, to use a different comparison, double the weight, or sixteen lbs. would be required to produce in the periphery C, two revolutions in two seconds. And if the power is applied to the periphery A, no less than 32lb. weight would be required to produce one revolution in two seconds; and no less than 128 lb. weight, to produce four revolutions in two seconds: because, first, the diameter being greater, an equal number of revolutions implies a fourfold velocity; and, second, the influence or exertion of the weight on the periphery A, is only equal to one fourth part of that exerted on D. And now, to make a direct application illustrative of the fact, that quadruple power is required to produce double velocity, we would refer the reader to the circumstance of the diminution of the exertion of force, as the velocity is increased, notwithstanding the expense of power by the descent of the weight, is in proportion to the velocity, as illustrated with regard to the velocity of the periphery D. It is seen that the velocity of the wheel is only doubled during the *second* second of the application, notwithstanding that the descent of the weight,—which constitutes the expense of power—is three times as great as that during the first second of time.

(To be continued.)

Curious Arts.

A CHEAP IMITATION OF SILVER BRONZE.—Put into a crucible an ounce of pure tin, and set it on fire to melt; when it begins to melt, add to it an equal quantity of bismuth, and stir the mixture with an iron rod till the whole is entirely melted and incorporated.—Take the crucible then from the fire, and after the melted composition has become a little cooler, but while it is yet in a fluid state, pour into it gradually, an ounce of mercury, stirring it at the same time, that the mercury may be thorougly conjoined with the other ingredients. When the whole is thus commixed, pour the mass out of the crucible on a stone, where, as it cools, it will take the form of an amalgam or metallic paste; which will be easily bruised into a flaky powder, and may then be applied to sized figures in the manner of gold or silver bronze, or may be tempered with gum water, and applied to the work with a brush or camel hair pencil; and if properly secured with varnish or laquers, will be even more durable than either silver leaf or silver bronze.

TO PREPARE AN IMITATION OF GOLD BRONZE.—Melt two ounces of tin, and mix with it one ounce of mercury; when this is cold, pulverize it, and add one ounce of muriate of ammonia, and one ounce of sulphur, and grind them all together. Put the compound in a flask, and heat it in a clear fire, (carefully avoiding the fumes,) till the mercury sublimes, and rises in vapour. When the vapour ceases to rise, take the glass from the fire. A flaky gold colored powder will remain in the flask, which may be applied to ornamental work in the manner of gold bronze, of which it is a tolerable imitation.

TO TIN COPPER BY BOILING.—Boil half a pound of granulated tin, and six ounces of super tartrate of potass in three pints of water; when they have boiled half an hour, put in any piece of copper ware, and continue boiling fifteen minutes longer. The copper may then be taken out, and will have been handsomely coated with tin.

AN INDIAN HANGING.—The adoption of the custom of hanging criminals, by Cheroke Indians, is looked upon by many of the advocates of public murder, as an important item in the progress of civilization. The first Indian, that was executed in this manner by the Cherokes, was a man named Nat, who had killed another Indian who was called Musquito. The Cherokee sheriff had caused a gallows to be erected for the purpose, but the culprit being a very tall man, the gallows was found to be too short for his accommodation, wherefore the sheriff with the whole band of indians and Nat in the midst, betook themselves to the bank of the Arkansaw, where a tall cotton tree was found with a projecting branch, that was thought suitable for the purpose. The sheriff now told Nat to climb the tree, which he readily commenced, and the sheriff toiled up after him with the fatal cord. Nat reached the projecting limb and was directed by the sheriff to work himself as far out upon it as he could, which being done, the sheriff adjusted the noose around his neck and tied the other end of the rope around the limb. The sheriff then told Nat that he would slide down to the ground and would make a signal when the prisoner must jump off, to which Nat cheerfully assented. The sheriff reached the ground, and looking up to the limb he shouted, 'Now, Nat, jump!" and jump Nat did, and was soon suspended a lifeless corpse, to the wonder and admiration of his red brothers, who had never before been regaled with the sight of an execution after the white man's fashion.

A SMASHING BUSINESS—That the Boston and Albany railroad is doing a large and brisk business has been generally understood for several weeks past: but it has never before reached an equal rate of real smashing business that was accomplished last week. On the 7th inst. one of the trains encountered a yoke of oxen near Westfield, by which the oxen were killed and the engine was thrown from the track. On the same day a passenger train ran over and killed two cows, west of Pittsfield; and another train ran into a flock of sheep and killed twenty or more instanter. On the 8th one freight train ran into the one forward of it, by which the locomotive and five cars were nearly destroyed, and a part of their cargo of live hogs butchered. Fortunately no persons were killed, but if they go on smashing in this way, they will think themselves lucky if they do not get into the business deeper than will suit their convenience.

MORSE'S TELEGRAPH.—We had intended, ere this, to have given an engraving and description of this invention, with a full explanation of its principles. We now intend to commence the preparatory illustrations next week; but for the present we shall only remark, that when in operation, a long, narrow strip of paper is passed between two cylinders; and that a metallic point is pressed on the paper as it passes, so as to produce indentations therein; and these indentations of the paper, are made to express the letters according to the following Telegraphic Alphabet:

A - —	J — - —	S - - -
B — - - -	K — - —	T —
C — - -	L ———	U - - —
D — - -	M — —	V - - - —
E -	N — -	W - — —
F - — - -	O - -	X - — - -
G — — -	P - - - —	Y - - - -
H - - - -	Q - - — -	Z - - - -
I - -	R - - -	& - - -

SILK RIBBON FACTORY.—We are both surprised and gratified to learn that a manufactory of figured silk ribbons has commenced operation at Bangor, Me. Messrs. Vogel & Co. have commenced the manufacture of all kinds of figured ribbons and vestings by a process unknown in Europe, and with excellent facilities.

COPPER ORE FROM LAKE SUPERIOR.—[illegible] seven casks, containing ten tons of ri[illegible] recently arrived at Boston, and is t[illegible] works in Roxbury to[illegible] to be three [illegible]

VARIETY

An orchard in Westchester County, Pa., contains 20,000 apple trees, which have yielded the present year about 4,000 barrels of apples, which are readily sold for six dollars per barrel in Philadelphia, for exportation to England, where they are expected to command $12 to $20 per barrel. They are the Newton Pippins.

At a recent Fair at Burlington, Vt., a premium of fourteen dollars was awarded to M. L. Chase for three pretty female twin children. He ought to have had three gold medals at least.

At Munster, in Ireland, the priests require from $50 to $100 from a bridegroom or his friends, as a marriage fee. These priests exert their influence in favor of early marriages.

An Indiana paper says that in some part of Massachusetts notices of intention of marriage are published in the newspapers. It is a wohder that the people of that state have not heard of it.

More money was expended by christian nations during the year 1845, in preparations for war, than has been appropriated to the promulgation of the gospel since its introduction.

St. Peter's Church at Rome has recently betrayed some defects in its structure, and serious apprehensions are entertained that it will soon tumble into ruins.

There are fifty cotton factories in Tennessee, which work up about ten thousand bales of cotton annually. We are pleased to hear of such enterprise at the south.

India rubber consciences are in brisk demand, and those engaged in the manufacture of this commodity, can not find time to speak the truth more than twice a week.

A marine rocket has been introduced in England, by means of which a half-inch rope may be thrown on board a stranded vessel from the shore, a distance of 1500 feet.

There is computed to be 800 suicides annually in the United States, and only a hundred other murders. Thus it appears that eight-ninths of the murders are committed by the victims, themselves.

The Massachusetts Ploughman disapproves of blinds for horses as they are now made. It is abundently evident that the sight of the horse is much impaired by being thus blinded.

A cotemporary says that man's rank was formerly known by the size of his shoes. Those of a prince measured two feet and a half; while those of a plain citizen were restricted to twelve inches.

Charles T. Woodman, who has been a popular lecturer on temperance, having been again overcome by a vitiated appetite, now lies sick, if alive, at the South Boston House of Correction.

The snow was 18 inches deep at Cayuga Bridge above Rochester last week, in consequence of which a train of cars, being unable to proceed, was left on the track.

A tree was lately felled in England, which was found to contain another tree inside of it. The inside tree had no bark, but was otherwise perfect.

Mr. E. R. Robins, of Cornwall Vt., has raised a beet that weighs fifteen pounds. It is ever so many inches in length, and still larger in circumference.

The ship Aretas has sailed from Boston with a cargo of ice for China. American ice has become an important article of trafic at Hong Kong.

A new engine on the Bristol and Liverpool Railwoy, is said to be capable of drawing 1000 tons, with ordinary speed. It has six wheels connected.

It is estimated that $20,000 per week are expended, in this city, in support of theatrical entertainments. They are no benefit to society.

The Exchange House, in Hallowell, Me., has become a temperance house. The friends of temperance will of course, give it a preference.

A section of the Boston and Plymouth railroad, extending over a swamp in Weymouth, sunk on Monday week, and the rails disappeared,

It was an arbitrary custom in ancient Egypt for the head of a family to shave his left eye brow on the occasion of the death of the house cat.

The returns of the census in Illinois indicate a population of at least 700,000 inhabitants in that state, the increase is rapid.

Eighty-two cases of arrest for drunkenness occurred at Lowell this year, prior to Sept. 4. The morals of Lowell are "getting no better, very fast."

It is estimoted that full six hundred new buildings will have been erected in Louisville, Ky., at the close of the present year.

A Yankee has invented a new drilling machine. It is said it will not only drill iron, rocks, and wood, but it is also useful in *drilling military companies.*

A large flouring mill is in progress of erection on Turkey river, and only eighteen miles from Prairie du Chien, Iowa.

The number of passengers on the Hudson River, the present year, is computed at upwards of *twelve hundred thousand.*

The population of the city of Detroit, Mich., has increased from 9,000 to 13,000 within five years. It is a flourishing and lively place.

The number of letters deposited in the Baltimore Post Office has been 250,000 more under the new law, than for corresponding time last year.

The water was let into the new aquaduct at Worcester, last week, and showed a capacity of projection to the height of about fifty feet.

Birth day of Washington.

Why swell a million hearts as one,
With mem'ries of the past?
Why rings out yonder thunder gun
Upon the rushing blast?
Why hold the beautiful, the brave,
The jubilee of earth?
It is the happy day that gave
Our patriot hero birth.

We offer here a sacrifice
Of hearts to him who came
To guard young Freedom,s paradise
With a sword of living flame!
To him who, on War's whirlwind loud,
Rode like an angel form,
And set his glory on the cloud,
A halo of the storm.

A hundred years, with all their trains
Of shadow have gone by,
And yet this glorious name remains,
A sound that cannot die!
'Tis graven on the hill, the vale,
And on the mountains tall,
And speaks in every sounding gale,
And roaring water fall!

No marble on his resting spot
Its sculptured column rears,
But his is still a nobler lot,
A grateful nation's tears·
Old time that hides the marble bow
Makes green each laurel leaf
That blooms upon the sainted brow
Of our immortal chief·

His deeds were ours; but through the world
That mighty chief will be,
Where Glory's banner is unfurled,
The watchword of the Free!
And as they bend their eagle eyes
On Victory's burning sun,
Their shouts will echo to the skies,
"Our God, and Washington!"

The Mechanic.

Lift up thy toil-worn hand,
Thou of the stalwart frame and fearless eye!
Lift proudly now thine iron hand on high!
Firm and undaunted stand!

No need hast thou of gems,
To deck the glorious temple of thy thought,
Thou hast the jewels which thy mind hath wrought,
Richer than diadems!

Mighty among thy kind,
Standest thou, man of toil, midway
Between the earth and heaven, all things to sway
By the high-working mind!

Thou canst delve in the earth,
And from its mighty caves bring forth pure gold;
Thou canst unwrap the clouds in heaven rolled,
And give the lightning birth!

Thou hast the stormy sea,
Chained to thy chariot wheels, and the wild winds
Obey the o'er-ruling intellects that binds
Their rushing wings to thee!
Thou canst new bands create,
Where the wild rolling wave no mast'ry owns;
And the vast distance of opposing zones
Canst thou annihilate!
Lift then thy hand to heaven!
Spread thy tall sceptre o'er the sea and land;
Thou hast the world entrusted to thy hand,
Earth to thy charge is given!

DO your Duty come what may.

Do your duty come what may—
'Tis the sum of life's great beauty;
Do your duty every day,
And every day still do your duty.

Every prize for man to win,
Be it fame or be it beauty,
Speaks louder than a trumpet's din
Do your duty, do your duty.

Life is short and still receding—
Would you find the brighter way?
Then this lesson ever heeding,
Do your duty night and day.

Regions in the future lie,
Realms of yet unheard of beauty;
To find them you have but to try,
And manfully to do your duty.

A Lucky Boy.—A poor boy in Nashville, Tenn. lately found a small but beautiful stone among some muscle shells, on the banks of the river, and put it in his pocket, not knowing or thinking of its value. Soon after, he chanced to expose it to view, when a gentleman proposed to send it to Philadelphia to ascertain its value. It proved to be a genuine pearl, weighing 18 grains, and worth from $500 to $1000.

A Perfect Chronometer.—Mr. Victor Giroud, watchmaker, 281 Broadway, has constructed a chronometer that contains a dial showing the equation of time, and three dials which con- perpetual calendar; adapts itself to the inequalities of the months, and introduces the intercalary day of leapyear. This chronometer runs a year without winding.

The Magnetic Telegraph.—The line between this city and Washington is expected to be completed in three or four weeks. The posts for the telegraph from Boston to Nantasket, a distance of about twenty miles, are all put up, and the wires will soon be arranged.

American Iron.—The production of iron in this country for the year 1844 was 486,000 tons, not much if any, less than one-third of the quantity made in England. It is computed that according to the present rate of increase, in three years our annual production will go up to 1,000,000 tons.

New Inventions.

A Writing Telegraph.—A new electrical telegraph, by which the despatch is written with a pen by the action of the fluid, is said to have been successfully proved at Brussels, in the presence of the Minister of Public Works. This might undoubtedly be effected by means of nice and complicated machinery, but we can not see much advantage to be gained thereby, over the more simple plan of Prof. Morse.

The Iron-slave.—An invention has lately appeared under this name in England. It appears, from the slight description given of it, to consist of a steam-engine, mounted on three wheels—one a steering wheel,—and calculated to be employed in agricultural business, such as ploughing, harrowing, &c., and similar to the invention which appeared in No. 6 of this paper. All right: if John Bull can compete with us at that business, let him do it.

Improved Churn.—A mechanic in Northampton, Mass., has introduced a churn which is operated by the descent of a weight. The same quantity of power must, of course, be applied to wind up the weight that would be required to operate the churn by hand: but as a greater force may be applied to a crank in raising the weight than is requisite to operate the churn, considerable time may be thus gained which may be otherwise improved.

A Potato Digger.—A machine has been put in operation at Salem, N. J., for digging potatoes by horse-power. It is said to have thrown out the potatoes as fast as thirty-six hands—men and boys, probably—could pick them up. It is evident from this circumstance, however, that the machine is far from perfection. It should have been so constructed as to take up every hill, sift the earth from the potatoes, and deposite the latter in the cart, at least,—not to say the cellar.

A Pocket Lock.—A gentleman in Amherst, Mass., has invented a metalic clasp with a lock, to be attached to pockets for the security of the contents thereof. It may be useful, but we should think the pockets of most capitalists were quite sufficiently close locked already. We think the best security for pockets, however, is to carry nothing in them *worth losing*.

An Improved Pen.—Dr. Bean of Philadelphia has invented a pen with a cistern or fountain, which will contain a sufficient quantity of ink to write a page of letter paper without replenishing. We have often thought of the utility of such a pen, and hope this will prove unobjectionable.

Railroad Intelligence.

The Atlantc iand Montreal Railroad is about to be located; a party of competent engineers being engaged in surveying the route of the upper sections.

It is decided to locate the Vermont Central Railroad to Burlington. The whole road from Windsor to Burlington is now located, and will soon be under contract.

A Railroad from Galena to Chicago, Ill., is contemplated, and its advantages are represented in very favorable light. Should this be constructed, the produce of the lead mines would be brought to this city by the way of the lakes and canal.

The railroad between Boston and Salem is graded for a double track, which will be laid as soon as the iron can be procured.

The balance of the stock in the Worcester and Nashua Railroad having been taken up, the road will be completed without delay.

Also the stock of the Saratoga and Washington road has been taken up, (a surplus of $100,000 subscribed,) and of course that road will soon be graded.

The entire route of the Munroe, Ga., railroad is to be completed by the first of May next.

The Georgia Central R. R. Company have decided to construct a branch to the city of Columbus.

Purloining an Invention.—We published in No. 7 a notice of an improved Spinning Frame, recently put in operation, and purporting to have been invented by a Mr. Baxter, of Paterson, N. J. But from the following certificate, which has been sent us from Manchester, Va., it appears that Mr. Baxter is not entitled to the credit of the invention, but has been taking liberties with the invention of another man. If Mr. Baxter is disposed to vindicate his own course, however, our columns are at his service,—he may speak for himself.

We the undersigned are ready to testify that the invention and application of a belt applied to the Bobbin Tube, or Waive, as described in the New York Sun, was put in operation last summsr in the Manchester Cotton Factory by the Superintendant, J. Whitehead. We never heard or believe that Mr. Baxter had any thing whatever to do with the invention, or in assisting in its application in any way whatsoever.

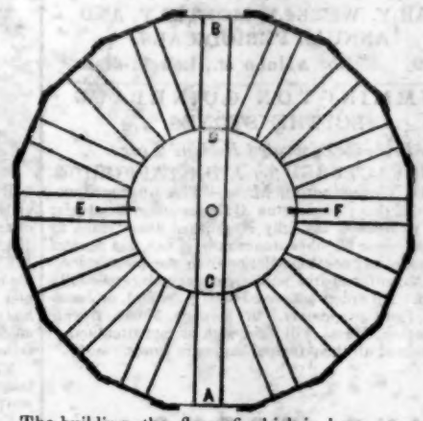
Peter Small,	Wm. Whitworth,
James McGee,	Joseph H. Gibbs,
Wm. Stansfield,	John Whitworth,
R. S. Whitehead,	J. Calban,
A. B. Waugh.	

Manchester, Va., Nov. 10, 1845.

A Burlesque Invention.—The Brooklyn Daily Advertiser announces an invention which outstrips C.. if the galvanic rings and plasters ever heard of. It is constructed upon the electro-galvanic principle: and consists of lining the hat with copper and the boots with zinc, into which is poured dilute sulphuric acid. A connecting wire extends from the tile to the pedal extremities, running along the seam in the inexpressibles. When this contrivance is put in operation, the most *halt* rheumatic starts off at a hand gallop, and can with difficulty *halt* at all, but continues "on, on," like Mazeppa's Ukraine charger, or the "cork leg."

Almanacks.—Of the vast variety of almanacks, published for 1846, we have seen none which contains more important inteligence, and which we would more readily recommend, than the Protestant Almanack, published by A. W. Blakesly, 128 Nassau street.

Plan of the Engine House at the Western Termination of the Boston and Albany Railroad.

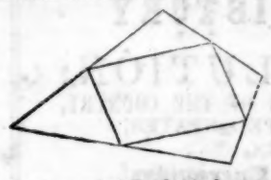


The building, the floor of which is here represented, is situated near the western termination of the Western Railroad at Greenbush. The height of the building is about 80 feet, and its diameter 140 feet, with a spacious rotunda nearly 140 feet in diameter, which conveniently accommodates the smoke from the engines. The building is sixteen sided; with several windows on each side, and has two large doors through which a main track passes, as represented by A, B, in the cut. In the centre of the building is mounted a circular turnable, C, D, of 43 feet diameter; to which two stout levers, E, F, are attached, by means of which the turnable is made to revolve. From this turnable fourteen other tracks radiate to the sides of the building. When an engine is to be deposited in this building it is run on to the turnable, C, D. The turnable is then turned till the section of track, attached thereto, comes into the line of the section track which is to receive the engine, which is then run off the turnable and deposited. By this management, 17 large engines, with their tenders, may be deposited in the building, without being inconveniently close together.

There are several other buildings, erected by the company, at this terminus which are worthy of notice. The machine shop is 107 feet long by 68 feet wide, (exclusive of smithshop,) and two stories high, with two tracks running through the length, and connecting with the Engine House in one direction, and with the Railway in the other. The Car House is 160 feet long by 40 wide, with three tracks, and will contain twelve long passenger cars, which form three entire trains for summer business.

On the Island are two large buildings exclusively for the transhipment of passengers and merchandize. The passenger House is entirely of wood, 225 feet long by 62 feet wide, with ladies' and men's saloons, and spacious platforms below, and office rooms in the second story. Two tracks run through within the building, and are connected with tracks outside by a turnable at the west end. The Freight House is of brick, one story high, 420 feet long and 90 feet wide, having a platform of the same length 20 feet wide, and roofed over between it and the excavated channel. Three tracks run through the entire length, and are connected by slide tables at the centre of the building, and in like manner near the west end, with three tracks outside. Merchandize is received from and delivered into wagons on the north side of the building, and on the south side is raised from and lowered into boats and other vessels by steam power. East of the Freight House a track extends along the wharf of the excavated channel for the transhipment of lumber, wood, coal, iron, stone and other commodities not injured by exposure to the weather. The "storage lots" on the main land are also available for the same and other purposes whenever required. The Island division of the Depot and Ferry boat is connected to the main land by a bridge over the creek of 202 feet span, having two tracks and a common carriage way. The excavated channel is eight feet deep and sixty-six feet wide at the lowest water. The freight accommodations are sufficient for the receipt and delivery of 1000 tons of merchandize per day.

The Trapezium.—It is a curious fact in geometry, that if the centre points of each of the four sides of a *trapezium*,—an irregular quadrangle of any shape or size,—are connected with each other by right lines, as shown in the following figure, these bisecting lines will invariably form a complete parallelogram;—a figure, the opposite sides of which are parallel with each other.



We have been reminded of this by a correspondent of the "Farmer and Mechanic," who invites a geometrical demonstration thereof. We shall not attempt such a demonstration as is probably required or expected, but may render the subject somewhat more comprehensive by simple illustration. It is readily seen that should a line be drawn from one centre point to the opposite, every part of this centre line must be equi-distant from the side lines on the right and left: and as the same rule would also apply to another centre line crossing in the other direction, it is clear that these two centre lines must of necessity intersect each other at the centre of each; thus forming a cross, each two opposite arms of which are equal: and that consequently, each two opposite lines which may be made to connect the ends of the four arms, must necessarily be parallel to each other: thus forming a parallelogram.

Telegraphic Conversation.—One of the telegraphic stations is sometimes managed by a lively young girl. She recently received per telegraph, the question, "How do you do, my dear," to which she immediately replied, through the same channel, "Please to mind your own business, sir, and not stand looking at the girls."

Galvanism.

All metals, from the brilliant gold to the lustreless pelter, are subject, in a greater or less degree, to oxidation, which consists of a chemical combination of the metal with the oxygen of the atmosphere, of water or of acids. During this process of chemical action, a quantity of electric fluid is liberated from the metal or from the oxygen, in which it had been latent, and pervades the pores and surface of the metal, until it finds an opportunity to escape by some conductor to other objects. When two plates of different metals as of copper and zinc. are immersed in a saline solution, the plate which has the greatest affinity for oxygen, becomes corroded, and the electric fluid is produced, which has a manifest tendency to escape through the medium of the solution to the other plate: but unaccountable as it is, if the two plates are connected by a metallic wire, outside of the liquid, the electric, or, as it is most generally termed, galvanic fluid, passes back to the first plate via the wire; thus performing a circuit. In this instance the zinc plates, having the greatest affinity for oxygen, becomes corroded, and is termed the positive plate, or pole, while the copper remains unaffected by the solution, and is termed the negative plate, or pole of the battery. And if the solution consists of sulphate of copper, a portion of the copper in solution will become revived and deposited on the copper plate: the galvanic action thus building on the copper plate, while the zinc plate is diminished by the action of the solution. To explain this action more definitely, the sulphate of copper in the solution becomee decomposes, the acid combining with the zinc, and dissolving it, thus forming a liquid sulphate of zinc, while the copper, being liberated from its combination with the acid, is revived and deposited on the negative plate. If the wire attached to the negative plate extends to another vessel containing a solution of sulphate of copper, and another wire extends from the zinc plate to the same vessel, the ends of both wires being immersed in the solution, though several inches apart, the galvanic fluid will pass with great facility from the copper plate to this second vessel, through the solution to the other wire, and back to the zinc plate. In this instance, the end of the first wire that is immersed in the solution, becomes a positive pole, and the end of the other wire a negative. And in this instance. the end of the positive wire will become corroded and dissolved, while the other will be increased in size by the deposition of copper from the solution. If a cent piece is attached to the end of each wire, and immersed in the solution, that on the positive pole will become dissolved, while that on the other will become coated with pure solid copper, which, when pealed off, will shew a perfect impression of every minute figure of the mould on which it was deposited: and this is the true principle of electrotyping.

(To be continued.)

The Quadruple Rotary.—We have received several letters, requesting more particular information on the subject of the parallel rotary engine, a description of which appeared in the 3d No. of this paper. With regard to its power, as a steam engine we shall thus demonstrate.—One horse-power, according to the general acceptation in this country, is equal to raising 100 lbs. 300 feet per minute. If the diameter of the steam wheel be 4 inches, we reckon the motion of the wings or floats thereof, at one foot to each revolution. Thus if each float presents a surface equal to one square inch to the action of steam, and the steam is applied under a pressure of 100 lbs. per square inch, then the united force of steam on both sides of the wheel, is 200 lbs., and a velocity in the wheel of only 150 revolutions per minute is required to work a horse power. Yet the fact is, that a velocity of 1500 revolutions per minute would be but a modorate motion for a little wheel of that size, and in that case it would work ten horse-powers. And by the same rule, if the wheel is 4 inches deep instead of one inch, as above supposed, it will work 40 horse-powers. We do not pretend that it will require less fuel ot a less capacious boiler, than would be required to produce equal power in the cylindric engines: nor that there will be no loss of steam by leakage: but as we can not reasonably allow more than ten per cent. for leakage, whereas 30 per cent. is allowed for friction in other engines, we can not admit that any less nett power will be produced by this than by the heavy engines. With regard to its application as a pump, we would explain, that the wheel is to be placed horizontally below the surface of the water, and the shaft may extend vertically to the top of the well; thus by turning a crank at the head of the shaft, the water is forced up through two pipes at the same time, to any required height. As a water-wheel or blowing wheel, it is much more easy of construction, and will effect a great saving of power in either application. The cost for a medium size blowing wheel will be not far from fifty dollars.

The Utility of Inventive Genius.—A few years ago, the ship Perarim, Capt. Wootter, sprang a leak at sea, and after a week of severe labor at the pumps, it was found impossible to free the ship, and six feet of water being then in her hold it was determined to abandon her, though blowing hard at the time. A Mr. Carstairs, an ingenious mechanic, being on board, suggested that a windmill might be rigged to work the pumps. The idea was improved, the experiment was made and the vessel was saved. This windmill is now exhibited at the rooms of the Franklin Institute, Philadelphia.

Singular Phenomenon.—About three weeks since, the water of Lake Ontario, was observed to recede from the shores of the Canada side, and in a few minutes a large part of the harbor of Coburg was left entirely bare. Shortly after the water not only returned, but rose two feet higher on the shore than its ordinary level, and then again receded. This extraordinary action was continued for several hours. A steamboat attempted to enter the harbor of Port Hope, but ran aground, and had to wait for the return of the unaccountable tide before she could proceed.

"The Bible."

"What is it? It is the written revelation of God to man. It teaches us the first revolutions of this world, and foretells the last; and is to be received (every word of it) for just what it purports to be—every word and passage being understood in its literal import, unless it involves an absurdity, or a plain contradiction.

It was written in Hebrew, Chaldaic, and Greek, by more than forty different men, who wrote as they were moved by the Holy Ghost. These writers were of every degree of intellectual cultivation, of every state and condition in life, and appeared at intervals, during a period of fifteen hundred years. It was written in the centre of Asia, in the sands of Arabia, in the deserts of Judea, in the courts of the Jewish temple, in the sumptuous palaces of Babylon, on the banks of the Chebar, in the schools of the prophets, and in the centre of eastern civilization; it is written with all the minuteness of historical and chronological narration, in the sublimest strains of poetry, and in the charms of glowing song; and yet with such a diversity of circumstances under which it was complied, there is a uniformity of expression, a similarity of style, and a general tone of thought, running through the whole, with no contradiction of one writer by an other, with none of those absurdities which are found in all other ancient authors, and with no single assertion or illusion which has been disproved by the progress of modern science. Does the reader inquire for the cause of this wonderful harmony and agreement? It is because "the prophecy came not in old time, [or as the margin reads, at any time] by the will of man: but holy men spake as they were moved by the Holy Ghost." Consequently, they did not speak their own thoughts or write their own ideas—they had no will respecting it; but they wrote what the Spirit dictated, as the Spirit presented it: they were mere amanuenses.

The Bible is, therefore, to be regarded as a perfect whole, the work of one mind: and that Mind the Creator of all things. As it was written during an extended period of fifteen hundred years, it was given to man for doctrine, for correction, for reproof, and for instruction in righteousness, to acquaint us with the past, and inform us of the future, as God saw it was needful or proper to communicate it to man. It begins with the earliest history in Eden, records all that is necessary for a perfect history in the progress of events, and gradually unfolds the future, line upon line, precept upon precept, here a little and there a little, as the wants of man required. It was not given all at once, nor was everything that is revealed respecting the various topics there illustrated found in the same connection; but that which was at one time more obscurely presented, is at many subsequent times more clearly and fully explained. Therefore, by examining only what we find in one prophecy respecting any one topic, our ideas on that point will be very obscure and incorrect. The question then arises, how are we to understand the prophecies which are thus obscurely presented? St. Peter has given us the key. In 2 Pet. 1 20 he exhorts us to know "this first, that no prophecy of the Scriptures is of any private [or self] interpretation;" that is, says Bishop Horsley, "no one of the prophecies explains itself, or is to be interpreted alone."—Why not? "For," says Peter, "the prophecy came not in old time [margin, at any time] by the will of man." Had the prophecy been written by the will of man, everything alluded to by each individual prophet, however near the resemblance, might have had no necessary connection with that spoken by the other prophets: each would have had topics peculiar to themselves, and must have been their own interpreters. "But holy men spake as they were moved by the Holy Ghost." Thus no one spake the whole mind of the Spirit; each one spake a part; the Holy Spirit spake through them all—a part of its mind by one, and a part by another, and when all had spoken, then we had the whole of the revealed will of God to man, one part of which explains another part. We are, therefore, not to confine ourselves to a single prophecy for an explanation of all contained in such prophecy, but we are to search the whole Scriptures, and find all that the Spirit has said—a little here and a little there—on every separate topic spoken of in the Scriptures, and what is said in one place will explain what is said in another, and thus all the several topics of revelation, however obscure they may have been, become plain and easily understood."

Gratuitous Swearing.—Men will swear and transgress the third commandment for nothing—but they do not like to invoke the curse of the Almighty for a reward. Mr. Romain, hearing a man call on God to curse him, offered him a half a crown if he would repeat the oath. The man started; what, said he, do you think I would curse my soul for half a crown? Mr. Romain answered, "as you did it just now for nothing, I could not suppose that you would refuse it for a reward." The poor fellow was struck by the reproof, and said, "may God bless you and reward you, sir, whoever you are. I believe you have saved my soul. I hope I shall never swear again."

An Interesting Extract.—At its birth, the child occupies a sort of middle-ground between life and death—its eyes cannot see distinctly. The heart beats feebly, as though its motions would soon expire by their own limitations. And yet in a very short time the little steam-engine begins to quicken its strokes, the hot blood gushes through all the alleys of the system: soon the little feet that would not support the weight of his limbs, climb the mountains of the earth, and travel round the globe: and off from its fingers' ends leap railroads, steamboats, power-looms, and libraries.

From the Evening Mirror.

Hans Schaffer.

Hans Schaffer was a Dutchman,
In Jersey born and bred;
Where peaches are so plenty,
And all the mud is red.

His father was a Dutchman,
Likewise his mother too;
And his uncles, aunts, and cousins—
Faith, they were not a few!

Hans wore the real Dutch breeches,
Dutch was his coat and hat;
So was his umb-er-ella—
But I won't speak of that.
His shoes and his knee-buckles,
His collar and his vest.
And his linsey-woolsey stockings,
Were Dutch, like all the rest.

Hans Schaffer he got married,
Having nothing else to do;
His wife—may Heaven bless her!—
She was a Dutchman too.

But, ah! poor mortal creature,
It happened that she died,
About a week or two before
The nuptial knot was tied.

And all the people mourned her—
'Twas very right they should;
Yea, all Han's wife's relations
Of tears shed quite a flood.

"Well, what of HANS?" you query;
What's that to you or me?
He's living still in Jersey,
And there we'll let him be.

A QUID PRO QUO.—Masson, Regent of Trinity College, had asked one of his friends to lend him a book, which he wished to consult, and received for answer, "that he never allowed his books to go out of his room, but that if he chose to come there, he was welcome to read as long as he pleased." Some days afterwards this pedant applied to Masson for the loan of his bellows, who replied, "that he never allowed his bellows to go out of his room, but that, if he chose to come there he was welcome to blow as long as he pleased."

SNATCHING A KISS.—A negro in Baltimore lately undertook to kiss a snapping-turtle for a five-cent piece, when the owner slipping the noose from the head of the monster it caught the poor fellow's upper lip, and it was impossible to deliver him until its jaws were forced open. He said "he wouldn't buss anoder for a dollar: tank his stars for de 'scape dis time."

Why is a certain shrub called *dog*-wood? Because it is known by its *bark*.

ALEX. MACDONALD: PRINTER.